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# LOW BIRTH WEIGHT AT TERM AND CONTRIBUTING MATERNAL FACTORS IN COMMUNITY BASED HOSPITAL KORANGI, KARACHI.

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**ABSTRACT…** Low birth weight is a key determinant of infant survival, health and development. Low birth weight infants are at a greater risk of morbidity and mortality than an infant of normal birth weight and create a substantial strain on the healthcare system. **Objectives:** To determine the frequency of low birth weight at term and maternal contributing risk factors in women attending antenatal clinic at Creek General Hospital Korangi, Karachi. **Study Design:** Descriptive cross sectional study. **Setting:** Department of Obstetrics and Gynecology of Creek General Hospital, United Medical and Dental College Karachi. **Period:** From May 2017 to April 2018. **Material & Methods:** Those women who gave birth to babies with less than 2500gm at term, were included in the study to ascertain the frequency and risk factors of low birth weight including age, parity, booking status for antenatal care, pre-pregnancy BMI, history of tobacco intake, medical disorders arising in pregnancy like anemia, pregnancy induced hypertension and gestational diabetes mellitus, birth weight and fetal gender. The data was analyzed on SPSS software. **Results:** The prevalence of term low birth weight was 22%. Percentage of low birth weight babies among teenage mothers was 72.8%, among the studied mothers 67.4% were primipara, 91.5% had standard antenatal care, Pre-pregnancy BMI was found to be normal in 93% of mothers, 9 mothers (7%) had history of tobacco/ betel nut chewing habit. In this study, iron deficiency anemia was found to be most significant factor leading to LBW babies (62 %). 12% and 8% of mothers were diagnosed with Pregnancy induced Hypertension and Gestational Diabetes mellitus respectively. Regarding fetal gender, 68 were females (52.7%) and 61 (47.3%) were males. **Conclusion:** Low Birth Weight is an important contributing risk factor for perinatal mortality and morbidity in Pakistan. Anemia was found to be most significant risk factor leading to Low birth weight in our study.

**Key words:** Anemia, Low Birth Weight, Maternal Factors, Morbidity, Mortality.

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## INTRODUCTION

Low birth weight is defined as a birth weight of 2500 gram or below.[1] Prevalence of low birth weight is around 16% globally, with higher burden in third world countries.[2]

Intrauterine growth retardation leads to LBW and is more commonly observed in industrialized and first world countries while preterm labor and delivery is most important cause of LBW in third world nations.[3]

Anemic mothers, mother with low BMI, first pregnancy, pregnancy in teenage and insufficient maternal diet are considered to be factors associated with LBW.[1] Further more hypertension in pregnancy[4], bleeding in second or third trimester[5], short inter pregnancy interval[6] and history of tobacco intake are commonly associated with LBW.[7]

Lack of antenatal care is another crucial factor leading to higher risk of LBW. Thus, regular medical and nursing care in pregnancy is of critical importance for mother and her developing fetus.[8] Adequate and sufficient intake of nutrients by pregnant women is very important as the developing fetus is dependent on it for its growth via placenta.[9]

Birth weight is a very important and crucial factor that affects the growth and maturation of child

itself, it is also a measure of maternal nutritional intake, wellbeing and standard of living.[10]

LBW are associated with poor health status of infant and even endangers neonatal and infant life. Majority of these acquire appropriate growth by second year of their life, on contrary 15-20 % of these LBW babies have inadequate growth throughout their early years of life.[11]

Morbidities most common in low birth weight babies are Hyaline membrane disease, inflammation of intestine/ NEC, loss of vision or weakness, hearing problem, intellectual disability and cerebral palsy.[5] Increase risk of infections because of low immunity.[12] They are also at risk of having coronary artery disease, raised blood pressure and diabetes mellitus in their adult life.[13]

LBW is the cardinal factor for prognosis of infant survival and death, specially of neonatal death.[14] Consequently, it constitutes globally a significant load on medical care system and providers. This study was conducted to evaluate the frequency of LBW and contributing maternal factors in women attending antenatal clinic at Creek General Hospital Korangi, Karachi, to diagnose and mange high risk mothers timely and minimize its effect on health care system, families and can save our future generation.

## MATERIAL & METHODS

A descriptive cross sectional study was conducted for one year, from May 2017 to April 2018 in the department of Obstetrics & Gynecology at community based Creek General Hospital in Korangi, affiliated with United Medical and Dental College Karachi, serving mostly low socioeconomic community.

Total number of deliveries occurring during this time period were recorded. Patients delivering at our hospital in study duration were enlisted to ascertain the prevalence of low birth weight babies at term and to asses maternal contributing factors. The inclusion criteria included all those mothers who had delivered singleton alive baby with lesser than 2.5 kg weight at birth, at term (37-42 weeks) during study period.

Multiple pregnancies, mother with pre-existing medical disorders, intrauterine death and delivery at less than 37 weeks gestational age or beyond 42 weeks gestational age were excluded.

Maternal characteristics and factors including age, parity, antenatal visits, pre-pregnancy BMI, history of tobacco/ betel nut chewing habit, medical disorders arising in pregnancy like iron deficiency anemia, pregnancy induced hypertension and gestational diabetes mellitus, gestational age at delivery, birth weight and gender of baby were recorded on pre developed questionnaire.

Data were stored and analyzed using IBM-SPSS version 23.0. Pie chart used to give the incidence of low birth weight. Frequencies and percentages were reported for maternal characteristics of studied sample. This study was undertaken after ethical approval from ethical review board of the institute.

## RESULTS

During the study period, 129 pregnancies resulted in LBW neonates out of total 585 singleton pregnancies. The frequency of low birth weight was 22% in our study. (Figure-1)

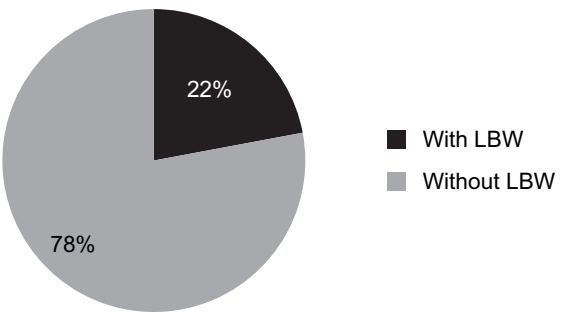


**Figure-1. Percentage of low birth weight (LBW) in study population.**

Figure-2 reports the distribution of weight of low birth weight babies, 96.1% were between 2.5-2 kg, 3.9% between 2 -1.5 kg while there was no baby with less than 1.5 kg weight in studied sample. Table-I shows maternal demographic characteristics and possible contributing factors of LBW. Large part of mothers in our study were less than 20 years i.e teenage mothers .94 (72.8%)

mothers were in age group less than 20 years, 29 (22.5%) were in age group of 20-29 years, and 6 (4.7 %) were in the age group 30 years and above.

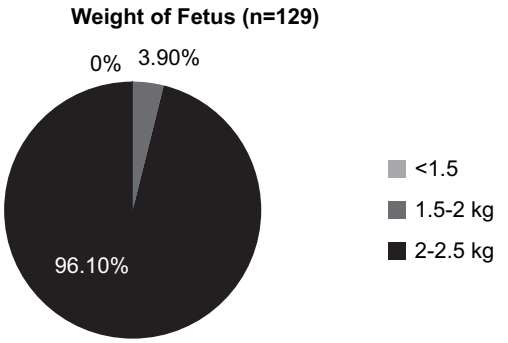


**Figure-2. Distribution of weight of low birth weight fetuses.**

The majority of the mothers were in primipara group 67.4 % followed by 17.1% in Para 1 to 4 group and 15.5% in para 5 and above group.

In patients who gave birth to LBW babies, only 11 (8.5%) were non-booked. Pre-pregnancy BMI was found to be normal in 93 % of mothers. In our study only 9 mothers (7%) with low birth weight had history of tobacco/ betel nut chewing habit.

Medical disorders during pregnancy were significantly associated with LBW. Mothers having any medical disorder during pregnancy were 100 (77.5 %) and 29 mothers (22.5 %) had no medical disorder. Iron deficiency anemia was found to be most common contributing factor n =80 (62 %). 12% and 8% of mothers were diagnosed with Pregnancy induced Hypertension and Gestational Diabetes mellitus respectively. Out of 129 low birth weight newborns, 68 were females (52.7%) and 61 (47.3%) were males.

| Characteristics & Factors | | n | % |
|---|---|---|---|
| Age | <20 years | 94 | 72.8 |
| | 20-29 years | 29 | 22.5 |
| | >29 years | 6 | 4.7 |
| Parity | Primipara | 87 | 67.4 |
| | 1-4 | 22 | 17.1 |
| | 5-above | 20 | 15.5 |
| Booking Status | Booked | 118 | 91.5 |
| | Un booked | 11 | 8.5 |
| BMI-mother | Normal | 120 | 93.0 |
| | Obese | 7 | 5.4 |
| | Underweight | 2 | 1.6 |
| Tobacco intake | Yes | 9 | 7.0 |
| | No | 120 | 93.0 |
| Medical disorder | Anemia | 80 | 62.0 |
| | PIH | 12 | 9.4 |
| | GDM | 8 | 6.2 |
| | Without any Medical disorder | 29 | 22.5 |
| Fetal Gender | Female | 68 | 52.7 |
| | Male | 61 | 47.3 |

**Table-I. Maternal demographic characteristics and possible contributing factors of LBW (n=129).**

## DISCUSSION

LBW is a significant element leading to unhealthful state and related to higher death rate in newborns around the globe.[15] Under developed and third world countries account for most of these births.[16] Neonatal mortality rate in Pakistan is very high and ranks third highest in the world, which is matter of great concern.[17] Around one quarter infants in our country are labelled as low birth weight.[18] During 2008-12, this LBW rate has estimated 32% in Pakistan.[19] The incidence for low birth weight in our study was 22%. Different studies carried out in the past have shown variable incidences of low birth weight. For instance, Iltaf G found a low incidence of 10.04%[8], while Aziz S[20] and Jalil A[21] found high incidences of 23% and 24.5% respectively. These variations in results probably observed due to diversity in cultural, ethnic and socioeconomic status of study population in these studies.

According to literature, factors interconnected to LBW are, short height of mother, low pre-pregnancy weight, panasian race, first pregnancy, tobacco intake, substance abuse and associated medical disorders in women.[22]

Maternal age and LBW relation is reported differently by different authors. In our study, 72.8% of mothers were in age group less than 20 years which is in contrast with international[2] and local studies.[23] But, is consistent with G Yisak et al.[14] and Iltaf G, et al.[8] whom found more risk of delivering LBW babies by teenage mothers.

The majority of the mothers were in primipara group 67.4%, which is in agreement with study conducted by Khan A et al.[13]

In our study 91.5% mothers were booked, which is in contrast to Khan A et al[13], in which 67% mothers did not received antenatal care.

Low maternal BMI is associated with delivery of low birth weight babies, observed in many studies.[9] But association of BMI and low birth weight may be not evident in our study probably due to smaller sample size, which is similar to study conducted by Ravi Kumar et al.[2]

Tobacco abuse, in any form is interrelated to LBW.[24] In our study 7% of women gave history of chewable tobacco intake.

Anemia is very prevalent in antenatal mothers, especially in third world countries where more than half of them are having low hemoglobin, which is then linked to LBW.[13] In this study, anemia was found to be most significant factor and main culprit leading to LBW babies , which is in agreement with many local[13,23,25] and international studies.[14, 26, 27] 12 % and 8 % of mothers were diagnosed with Pregnancy induced Hypertension and Gestational Diabetes mellitus respectively in study under discussion. In study conducted by Iltaf G et al, maternal factors like hypertension in pregnancy and diabetes were associated with LBW in 61.49% and 8.69% of cases respectively.[8] Ndu Ik et al, and Feresu SA et al also found strong association between low birth weight and Pregnancy induced hypertension.[3,16]

## CONCLUSION

Low Birth Weight has been found to be common problem in mothers delivering in this area. It is important to create awareness about teenage pregnancies and their associated problems. The present study recommends that mothers should be encouraged to have early booking, regular antenatal checkup for timely diagnosis and treatment of anemia, control of hypertension and optimized blood sugar levels during pregnancy. Use of chewable tobacco should be discouraged. Maternal diet should be given priority in family, counseling of mothers and their care takers should be done to ensure adequate diet intake during pregnancy to minimize the frequency of LBW and its related consequences.



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## AUTHORSHIP AND CONTRIBUTION DECLARATION

| Sr. # | Author(s) Full Name | Contribution to the paper | Author(s) Signature |
|---|---|---|---|
| 1 | Saba Pario | Data collection, Analysis, Literature review, report writing. | |
| 2 | Haniyah Qamar | Concept generation and data analysis. | |
| 3 | Rozina Mustafa | Literature review analysis of data final approval. | |